REMARKS

The Office Action dated August 22, 2005, has been received and reviewed.

Claims 1-33 are currently pending and under consideration in the above-referenced application. Claims 1, 2, 9, 13-29, and 31-33 stand rejected, while the subject matter recited in claims 3-8, 10-12, and 30 is allowable.

Reconsideration of the above-referenced application is respectfully requested.

Allowable Subject Matter

The indication that claims 3-8, 10-12, and 30 are directed to allowable subject matter is gratefully acknowledged. None of these claims has been amended to independent form, as the claims from which they depend are believed to be allowable.

Rejections under 35 U.S.C. § 112, Second Paragraph

Claims 1 and 25 have been rejected under 35 U.S.C. § 112, second paragraph, for purportedly being indefinite.

Claim 1 is rejected because it "cannot be clearly understood by the examiner." Office Action of August 22, 2005, page 3. Claim 25 is rejected because "the examiner cannot determine the scope of the claim." *Id.*

The standard for rejecting claims under the second paragraph of 35 U.S.C. § 112 is not whether the Examiner can understand a claim. Rather, the standard is "whether the claim apprises one of ordinary skill in the art of its scope . . ." M.P.E.P. § 2173.02.

The allegedly objectionable language in independent claim 1 is the recitation of "preventing unconsolidated material from contacting a bottom surface of [a] substrate" without providing an explanation as to "how this is done or what allows it to do so." One of ordinary skill in the art would readily understand, without a specific example in independent claim 1, that there may be a number of ways in which unconsolidated material may be prevented from contacting the bottom surface of a substrate. This would especially be true in light of the nonlimiting examples that have been provided in the specification of the above-referenced application. In any event, the Examiner's ability to understand the scope and meaning of this

element of independent claim 1 is clear, as specific citations have been provided regarding art that the Examiner believes affects the patentability of this element of independent claim 1.

Claim 25 has been rejected for including the term "substantially." One of ordinary skill in the art would, without question, understand when a receptacle has been substantially filled with unconsolidated material.

Therefore, independent claim 1 and claim 25 meet the definiteness requirement of 35 U.S.C. § 112, second paragraph. As such, withdrawal of the 35 U.S.C. § 112, second paragraph, rejections of these claims is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Claims 1-2, 9, 13-29 and 31-33 stand rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Jensen in View of Zhang

Claims 1, 2, 9, 13-24, 32, and 33 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is allegedly unpatentable over the subject matter taught in U.S. Patent Application Publication 2001/0032111 to Jensen, Jr. et al. (hereinafter "Jensen"), in view of teachings from U.S. Patent 6,158,346 to Zhang (hereinafter "Zhang").

Jensen teaches that a programmed material consolidation process, specifically stereolithography, may be used to fabricate a support (*see* Paragraphs **[0049]** and **[0050]**). Jensen also teaches that the stereolithographically fabricated support may "prevent ingress and trapping

of particles between [a] film [thereon] and the back surface of [a] wafer or substrate" carried thereby (Paragraph **[0043]**) during chemical mechanical polishing (CMP) processes. *See* Paragraphs **[0042]** and **[0043]**.

The teachings of Zhang are directed to a rapid prototyping process in which a pattern representative of a layer to be formed is electrically charged onto a screen, the screen is moved in proximity to a particle-bearing receptacle located on a stage, particles in the receptacle are attracted to charged locations of the screen, the screen is moved to another location of the stage, upon which a substrate is located, and the particles are released onto the substrate. The particles are then nonselectively secured to one another by spraying a binder over the deposited layer of particles or by applying a currently generally to the particles to weld them together.

It is respectfully submitted that there are a number of reasons that a *prima facie* case of obviousness has not been established against any of claims 1, 2, 9, 13-24, 32, or 33.

First, one of ordinary skill in the art wouldn't have been motivated to combine teachings from Jensen and Zhang in the manner that has been asserted.

In particular, the relevant teachings of Jensen relate to CMP methods. More specifically, the teachings of Jensen relate to structures for supporting semiconductor wafers as material layers thereon undergo CMP processing. Although the support structures that are disclosed in Jensen may be fabricated by stereolithography, which is a single example of a programmed material consolidation process, Jensen does not provide one of ordinary skill in the art with any motivation to use the support structure in a programmed material consolidation process.

Zhang teaches an example of a rapid prototyping process. The rapid prototyping process of Zhang is not, however, to the confused with a programmed material consolidation process, as a program is merely used to form a pattern from unconsolidated particles. Once the pattern has been formed, adjacent particles are secured to one another nonselectively (*i.e.,* without a program), by spraying a binder material over the particle pattern or applying an electrical current generally to the particle pattern. Zhang does not include any teaching or suggestion that would have motivated one of ordinary skill in the art to use the support structure of Jensen in a

programmed material consolidation process, let alone in the rapid prototyping process disclosed in Zhang.

This readily apparent lack of motivation in the references themselves indicates an improper reliance upon the hindsight provided by the disclosure and claims of the above-referenced application in formulating the 35 U.S.C. § 103(a) rejection of claims 1, 2, 9, 13-24, 32, and 33.

Second, even when combined, Jensen and Zhang do not teach or suggest each and every element of any of claims 1, 2, 9, 13-24, 32, or 33.

Specifically, with respect to independent claim 1 and claims 2, 9, and 13-21 depending therefrom, Jensen and Zhang both lack any teaching or suggestion of preventing unconsolidated material from contacting a bottom surface of a substrate *as* one or more objects are being fabricated on or adjacent to the substrate by a programmed material consolidation process. More specifically, the teachings of Jensen are limited to preventing particles that would impede uniform polishing between a wafer and a support structure therefor, during CMP, not during programmed material consolidation. Zhang also lacks any teaching or suggestion as to preventing unconsolidated material or anything else from contacting the back side of a substrate during programmed material consolidation, or even during the rapid prototyping process taught therein.

Claim 18 is further allowable because Jensen and Zhang include no teaching or suggestion of applying a positive pressure to the bottom surface of a substrate to remove the same from a support surface. Rather, the description of Jensen is limited to "[c]hanging the vacuum or pressure . . ."

Claim 19 depends from claim 18 and is also allowable since Jensen and Zhang both lack any teaching or suggestion of creating a circular air flow beneath the bottom surface of a substrate to effect removal of the substrate from the support surface.

Claim 20, which depends from claim 19, is additionally allowable since Jensen and Zhang do not teach or suggest that a substrate may be caused to hover over a support surface. A combination of conditions must be present to cause a substrate to hover over a support surface; otherwise, the substrate could merely be ejected from the support surface.

Claim 21 is further allowable since neither Jensen nor Zhang teaches or suggest applying force the bottom surface of a substrate to remove the same from a support surface.

As for independent claim 22 and claims 23, 24, 32, and 33, which depend therefrom, Jensen and Zhang both lack any teaching or suggestion of programmably consolidating at least portions of unconsolidated material. Again, the relevant teachings of Jensen are limited to CMP processes, while the teachings of Zhang merely relate to a rapid prototyping process which lacks selective or programmed material consolidation.

Claim 32 is further allowable since Jensen and Zhang neither teach nor suggest preventing unconsolidated material from contacting a bottom surface of at least one substrate while unconsolidated material is introduced into a receptacle of a retention system. Again, the description of Jensen is limited to use of the disclosed support apparatus in CMP processes, while Zhang lacks any teaching or suggestion of preventing anything from contacting the back side of a substrate. Furthermore, Jensen and Zhang both lack any teaching or suggestion of effecting programmed material consolidation processes upon a substrate.

Therefore, it is respectfully submitted that a *prima facie* case of obviousness has not been established against any of claims 1, 2, 9, 13-24, 32, or 33 and, further, that each of these claims is directed to subject matter that is allowable under 35 U.S.C. § 103(a).

Jensen, Zhang, and Huang

Claims 25-29 and 31 are rejected under 35 U.S.C. § 103(a) for being directed to reciting subject matter that is purportedly unpatentable over teachings from Jensen, in view of the teachings of Zhang and, further, in view of the subject matter taught in U.S. Patent Application Publication 2003/0173713 to Huang (hereinafter "Huang").

Huang teaches a stereolithography method that includes use of an array of Fresnel zone plates. The remainder of the stereolithography method taught in Huang appears to be conventional, including the incremental immersion of a platen within a bath of UV-curable liquid photopolymer as layers of an object are formed upon the platen. *See, e.g.,* FIG. 1.

Claims 25-29 and 31 are each allowable, among other reasons, for depending directly or indirectly from claim 22, which is allowable.

It is also respectfully submitted that a *prima facie* case of obviousness has not been established against any of claims 25-29 or 31.

Huang does not remedy the lack of motivation for one of ordinary skill in the art to combine teachings from Jensen and Zhang in the manner that has been asserted.

Furthermore, Jensen, Zhang, and Huang do not teach or suggest each and every element of several of the rejected claims.

None of Jensen, Zhang, or Huang teaches substantially filling a receptacle of a retention system that includes a raised periphery laterally surrounding at least one substrate with unconsolidated material, as would be required to render each and every element of claim 25 obvious under 35 U.S.C. § 103(a).

Claim 27, which depends from claims 25 and 22, is further allowable since none of Jensen, Zhang, or Huang teaches or suggests use of a meniscus blade to planarize unconsolidated material with in a receptacle of a retention that supports one or more substrates upon which one or more objects are to be formed by a programmed material consolidation process.

Claim 28, which depends from claim 22, is additionally allowable because Jensen, Zhang, and Huang do not teach or suggest spraying unconsolidated material onto at least a portion of at least one substrate. Jensen does not include any teaching or suggestion with respect to unconsolidated material, whereas the teachings of Zhang are limited to use of an electrical charge to "pick up" particles from a receptacle and the teachings of Huang are limited to immersing a platen in an existing bath of UV-curable liquid photopolymer.

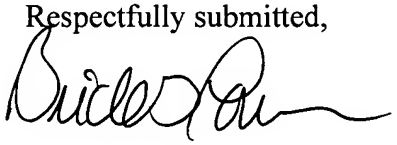
Claim 29 also depends from claim 22, and is further allowable since each of Jensen, Zhang, and Huang lacks any teaching or suggestion of dispending unconsolidated material in a laminar flow. Again, Jensen does not include any teaching or suggestion with respect to unconsolidated material, whereas the teachings of Zhang are limited to use of an electrical charge to "pick up" particles from a receptacle and the teachings of Huang are limited to immersing a platen in an existing bath of UV-curable liquid photopolymer.

Claim 31 is additionally allowable because none of Jensen, Zhang, or Huang includes any teaching or suggestion of removing excess unconsolidated material from a receptacle.

CONCLUSION

It is respectfully submitted that each of claims 1-33 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



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